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Northeastern Forest
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NED: a Set of Decision-Support Tools

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NED





NED is a collection of software products intended to help resource managers develop goals, assess current and future conditions, and produce sustainable management plans for forest properties. The software tools are being developed by the USDA Forest Service, Northeastern Forest Experiment Station. The NED project is coordinated by research work unit NE-4454 at the George D. Aiken Forestry

Sciences Lab in Burlington, VT, in cooperation with other research units in the Northeastern, North Central, and Southern Research Stations. Many state and educational institutions also are working in conjunction with the Forest Service on this project. NED software can be downloaded free of charge from the Internet at <http://www.fsl.uvm.edu>.

What is NED?

The NED concept is to use an original prescription design system to incorporate management goals for multiple objectives, analyze current forest conditions, recommend management alternatives, and predict future conditions under different alternatives. NED is designed to include a long-term, landscape-level view of the forest as an interconnected ecosystem that is too complex to understand at every level but which still must be managed. Recommendations for potential treatments involve information on all resources affected and provide options from which a manager may choose. The technique involves defining a management area of interest, defining goals for the area, identifying conditions necessary to meet each goal, and identifying conditions that can be met in conjunction with others, from most restrictive to least restrictive.

The process begins with the selection of management objectives, or goals, for any or all of five resources: visual quality, wildlife, water, wood production, and general ecological objectives. These goals are defined for a management unit at a scale from one to many stands, generally within the range of 5 to 5,000 hectares. Committees of experts in each of the specific resources have defined the conditions necessary to meet the specified goals, and have determined common variables to allow consistent evaluation of the conditions across goals. This integrated evaluation is a key element to the process of determining acceptable prescriptions and evaluating whether different alternative actions across the entire area will meet the desired conditions.

NED offers a number of products to meet different aspects of the model's purpose. The NED Chart lists these and their associated functions.



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The **Forest Stewardship Planning Guide**: Being a good steward of forest land is difficult. The primary purpose of this guide is to provide people with exposure to and explanations of a wide range of forest practices used to produce a variety of benefits from forests. The first step is to determine what goals the forest owner has for the forest. The **Forest Stewardship Planning Guide** program, which runs within the Microsoft Windows environment, guides the user through a process of selecting forest stewardship goals. The program offers a great deal of basic information about forests and their management, along with menus of possible stewardship goals. This program makes limited recommendations on how to manage a forest for specific goals and describes the conditions that must be created or enhanced to accomplish them. A companion program, called **Stewplan**, will be issued with the second version. **Stewplan** is a form-generating program that will facilitate the drafting of standard Forest Stewardship Plans.

NED/SIPS is an initial product of the development of NED. The computer program, subtitled Stand Inventory Processor and Simulator (SIPS), provides an effective means of creating, managing, and analyzing forest inventory records at the stand level. Its user-friendly interface relieves the pain of entering and editing stand inventory data, and once data are entered, a host of analytical tools are available to help understand the data. A variety of reports can be generated describing the vegetation structure, timber value, and economics of the stand. The user may apply any of a set of standard treatments to the stand or design a customized cutting scheme, and utilize one of the four incorporated stand growth simulators to show what the stand may look like in the future.

Some Features of **NED/SIPS** are:

- User-friendly interface featuring "pull-down" menus and context-sensitive help.
- Access to four growth and yield simulators using the same data file format. These four simulators, **NE TWIGS**, **SILVAH**, **OAKSIM**, and **FIBER**, were all developed independently by scientists with the Northeastern Station for use in the Northeast.
- Overstory summary tables for common measures of stand characteristics (that is, density, species composition, volume, and so on).
- Economic analyses of incomes and expenses over the planning horizon.



USDA Forest Service, Northeastern Forest Experiment Station,
705 Spear Street, P.O. Box 968, Burlington, VT 05402-0968,
Telephone: (802) 951-6771, Fax: (802) 951-6368.



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NED Software Products

NED Software	Goal Formulation	Data Entry/Storage	Analysis	Prediction	Custom Prescription Development	Expert Prescription Development	Release Date
Forest Stewardship Planning Guide							June, 1995
NED/SIPS							June, 1995
NEWILD							1996 (Beta Test)
NED-1							1997 (Beta Test)
STEWPLAN							1997 (Beta Test)
NED Health							1997 (Beta Test)
Product with Full NED Capabilities							To Be Determined

NEWILD is a computer program currently in final testing. The object of **NEWILD** is to assist in the access and evaluation of the information presented in the Species/Habitat matrices developed by DeGraaf et. al. These matrices describe the habitat conditions used or preferred by 338 vertebrate species in New England. Some of the text from the publications has been incorporated into the HELP portion of **NEWILD**. This program was developed based on the following publications:

DeGraaf, R. M. and D. D. Rudis. 1986. **New England wildlife: habitat, natural history, and distribution**. Gen. Tech. Rep. NE-108. Broomall, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 491 p.

DeGraaf, R. M., M. Yamasaki, W. B. Leak, and J. W. Lanier. 1992. **New England wildlife: management of forested habitats**. Gen. Tech. Rep. NE-144. Radnor, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 271 p.

NED-1 is a Windows program that emphasizes the analysis of forest inventory data from the perspectives of various forest resources. The resources addressed are aesthetics, ecology, forest health, timber, water and wildlife. **NED-1** evaluates to what degree individual stands, or the management unit as a whole, provide the conditions required to accomplish specific goals. An extensive hypertext system provides the user with information about the resource goals, the desired conditions that support achieving those goals, and the related data used to analyze the actual condition of the forest.

NED-Health is another Windows-based program that provides information on stress agents that affect the health of the trees within a forest. These agents may include insects, fungi, weather, or people. The program takes data on composition of a particular forest and identifies various causes of damage, how to recognize the particular agents, and what steps may be taken to avoid or mitigate damage.